

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of) PS Docket No. 06-229
Interoperability Showing for Waiver Entities)
for the development of a 700MHz)
Public Safety Broadband Network)

COMMENTS OF LA-RICS

Introduction:

The Los Angeles Regional Interoperable Communications System project staff (“LA-RICS”) offer these comments regarding the State of Texas letter to the Federal Communications Commission dated November 7, 2011 regarding “Response to Your October 12, 2011 Letter with Questions Relating to State of Texas Request for a Public Safety Broadband Network PLMN ID PS Docket No. 06-229” (Texas Letter).

LA-RICS, like the State of Texas, has a waiver to operate a broadband network using the Public Safety Broadband License (PSBL) spectrum. In addition, the project has been awarded a Broadband Technology Opportunity Program (BTOP) grant and is currently in the process of procuring a broadband system to operate in the 700 MHz spectrum. As a result, LA-RICS has a substantial interest in the Texas Letter and how it might impact the Los Angeles public safety community.

Response:

LA-RICS would first like to express its gratitude to the State of Texas, City of Charlotte, Adams County, and the Federal Communications Commission regarding their collective leadership in regards to 700 MHz broadband interoperability. LA-RICS recognizes the incredible amount of time and effort expended by these entities to develop and evaluate these proposals – the Los Angeles public safety community will benefit from this early work.

Overview

In advance of addressing the Texas Letter directly, LA-RICS provides the following overarching comments regarding public safety broadband interoperability. These fundamental positions drive the underlying perspective of LA-RICS with regard to national interoperability.

Public safety should pursue a single PLMN ID for the United States. This single PLMN ID will provide valuable user functionality that should be our primary goal. Specifically, the single PLMN ID will allow the user to employ standard device features to determine if the device is hosted on the public safety network or a commercial network. Since it is likely that the public safety network will provide differentiated service (e.g., access to special applications, improved quality of service), it will be important for the user to know the reasons why such services are not available. In short, we should collaboratively work together to make a single PLMN ID an interoperable reality.

However, there are a number of fundamental and central architectural and operational decisions that have substantial implications on capital implementation and operating costs in order to achieve national interoperability with a single PLMN ID. We note that without a PLMN ID, public safety will not have “operability,” and therefore, it is critical that public safety secure a single PLMN ID to operate these early networks. And given that several waiver entities are ready to launch their networks, the demand for a PLMN ID is immediate.

In the event that the public safety community cannot develop a workable solution for the single PLMN ID architecture, the Commission’s rules and policies must be flexible enough to allow a multiple PLMN ID solution. However, LA-RICS is confident that public safety can identify and implement an effective and affordable interoperability solution with the single PLMN ID.

LA-RICS does not support the acquisition of the nationwide PLMN ID by a single waiver entity. In other words, in the event that the State of Texas or the City of Charlotte were to secure a PLMN ID assigned to them, it would be understood that PLMN ID applied only to them, and not to LA-RICS, the other waiver entities, or any eligible public safety entity. Such a solution would be secured as a temporary solution until the national plan was implemented, or unless a single PLMN ID was proven impractical requiring waiver entities to secure individual PLMN IDs.

Decisions made at this early stage regarding public safety interoperability are being made without the input of the national public safety community. We must be mindful of the implications of these early decisions and their eventual impacts on non-waiver entities. Therefore, LA-RICS encourages all parties to minimize the impacts (functional, financial, and otherwise) on public safety entities across the country, whether or not they are currently engaged in the process.

Throughout this document, LA-RICS will share its current understanding of the complexities of nationwide interoperability among the waiver entities or others. The issues will not be resolved overnight. Based on the facts that have been presented to LA-RICS, there are likely several potential solutions to nationwide interoperability. Each solution presents various positive and negative attributes regarding reliability, flexibility, capital cost, and operational costs. Until a national plan is adopted by public safety, the waiver entities should be permitted to operate without the obligation of intra-public safety interoperability. The Commission should not take this statement to imply that interoperability is not important to LA-RICS – on the contrary, LA-RICS believes national interoperability is of the utmost importance. It is fully LA-RICS' intention to build a local system that is fully interoperable with the nationwide network.

LA-RICS believes that national interoperability is fundamentally a Federal obligation, not a local, state, or waiver obligation. In all of the cases of the “early movers” who are geographically dispersed throughout the nation, there is little real-world benefit to state or local public safety agencies to connect the networks and provide interoperability. Therefore, until the Federal government funds the capital and operating costs associated with nationwide interoperability, there should be no state or local obligation for interoperability. Instead, the waiver entities should be obligated to demonstrate in writing that they would be interoperable if the national components are implemented.

There is no guarantee that the Congress will deliver the capital or operational funding for a nationwide network. Therefore, the steps we take now must accommodate a scenario whereby Federal funding does not exist. LA-RICS believes that the waiver entities are capable of collaborating in this early phase to develop the foundation for public safety interoperability in the longer term. In essence, the waiver entities can develop an interim plan for interoperability, but the funding to implement the long-term national plan should be accommodated by the Federal government.

In the absence of a national plan or funding of that plan, the early waiver deployments should be allowed to operate on a single, nationwide, PLMN ID without the obligation of “operational interoperability”. The waiver entities will operate independently until the national plan and funding materialize.

Texas Letter Comments

The LA-RICS comments regarding the Texas Letter are focused on three key areas:

- Intra-Public Safety Interoperability/Roaming
- Commercial Interoperability/Roaming
- Governance

Intra-Public Safety Interoperability

Our comments with regards to intra public-safety interoperability are segmented by the specific individual requirements to achieve such interoperability: network identifiers (allocation and management), routing, and connectivity.

The Texas Letter focused predominately on the distribution of network identifiers under a single PLMN ID scheme. The proposal by the State of Texas provides a solid foundation for discussions. LA-RICS believes that the waiver entities and other interested parties can develop a workable solution to this problem. Given the sizeable quantities of identifiers, exhaustion of the numbers will likely take decades, if ever. LA-RICS recommends that the waiver entities collaborate and propose a plan to the Commission regarding all of the network identifiers. This work would be in conjunction with and leverage the work of the PSCR. LA-RICS is confident that the waiver entities can resolve the distribution of network identifiers by early next year.

LA-RICS notes that the network identifiers can be changed. If the waiver entities must eventually change to a multi-PLMN ID configuration or if the initial allocation does not accommodate the final plan, entities that deploy in advance of the national plan should be required to implement a change to the final plan by the date the final plan and funding are available. Fortunately, Long Term Evolution (LTE) systems can be reconfigured to address the change, including over-the-air modifications to the International Mobile Subscriber Identification (IMSI) if necessary. However, changes to the identifiers will be disruptive and will present risks to operations and should be avoided if possible. Therefore, changes should be minimized to the greatest extent possible.

The management of the network identifiers must be performed by a single entity (the Management Entity in the Texas Letter) that is independent of any single waiver entity. The

waiver recipients are currently discussing various options regarding the Management Entity. The Commission should give the waiver community time to weigh its options regarding the Management Entity.

A more challenging issue facing intra public safety interoperability is internetworking. Internetworking requires both routing of traffic and connectivity of networks. It is clear to the LA-RICS that the ideal architecture for routing between multi Home Subscriber Server (HSS) with a single PLMN ID employs Diameter Routing Agents. Depending on the level of national funding (to fund the national, not state or local portions of the nationwide network) and the existence of an entity to manage personnel and contracts to build, operate, and maintain national elements of an architecture, the ideal architecture could change substantially. If no "centralized" funding or governance exists, the ideal architecture will be decentralized equipment. However, if "centralized" funding and governance does exist, the ideal architecture could likely contain centralized equipment. In this case, the placement, ownership, operations, and configuration of Diameter Routing Agents will vary depending on these core factors. Therefore, the LA-RICS believes we may need to develop multiple national plans that depend on the existence of the appropriate funding and governance for a central body.

LA-RICS is concerned, but optimistic, that the vendor community possesses the necessary software, hardware, and configurations of Diameter Routing Agents to operationalize the single PLMN ID configuration. LA-RICS recommends that the final recommended architecture be implemented in the PSCR laboratories to conclusively determine if such a solution is feasible and interoperable between all public safety LTE equipment vendors.

Other routing based issues exist associated with internetworking. For example, public safety requires a national private Internet Protocol addressing plan and associated Domain Name

Service plan. LA-RICS recommends that the waiver community also be tasked with developing a plan regarding IP addressing, IP routing, and DNS for presentation to the Commission to address this need. These configurations too should be tested in the PSCR labs to ensure that they are functioning properly and ready for public safety grade operations.

In addition, interworking networks must also address connectivity. Initially, because the only traffic between networks is likely to be testing based, a best effort site-to-site VPN should suffice as connectivity. However, a highly reliable public safety grade solution requires dedicated bandwidth nationwide connecting not only the waiver entities, but all of public safety. A nationwide infrastructure of high-bandwidth connections is needed. Hopefully, public safety can develop applications and architectures that minimize the size of the connections, however, the inter-EPC (Evolved Packet Core) connections may eventually evolve into multi-tens or hundreds of megabits in size. Ultimately, the size of the connections will depend on the overall architecture and the application architecture. For example, if video traffic can be contained in the local network instead of travelling back and forth to the user's home network, public safety will save tremendous amounts of bandwidth on these inter-system connections. The governance and funding models must accommodate such capabilities with the flexibility for growth. Again, public safety should not rush into such decisions and the initial implementation should be sized appropriate with the capability to grow accordingly. Therefore, LA-RICS recommends that the Commission allow the waiver entities to collaborate with the vendor community to develop national architectures in parallel with the initial deployments and in parallel with Congressional efforts to establish governance and funding. The national architecture work must consider capital and operating costs as well as business models as this work may establish long-term cost

implications for public safety. Again, these efforts should be decoupled from the ability of the waiver entities to operate.

Commercial Interoperability/Roaming

Because of the high potential costs associated with commercial roaming, LA-RICS feels that public safety should not rush into a particular configuration or deal. We understand that the capability to be interoperable with commercial carriers is mandatory, but there is no requirement to implement commercial roaming. There are a number of challenges that public safety as a whole faces associated with commercial roaming. For example, how will billing occur if public safety uses a single PLMN ID? How will the bills route back to the appropriate roaming agency? How do we integrate regional roaming partners into the solution? Do we select a single nationwide roaming partner, or do we allow each region to select its right partner? How does device availability impact the selection of the right partner? Do affordable devices exist that can roam on to the right commercial network? Finally, there are additional technical impediments to implement LTE to LTE commercial roaming today. All of these issues must be carefully considered by the public safety community. LA-RICS believes the waiver entities should work together to propose a unified position with regard to commercial roaming that addresses these questions. Furthermore, if each entity has an agreement with a LTE equipment vendor that a) supports all of the necessary interfaces for roaming, and b) requires that vendor support the waiver entity to implement commercial roaming, when the architecture is finalized, then they satisfy the FCC requirements. LA-RICS suggests that any technically feasible solution should be accepted by the Commission, but that the solution should not obligate the waiver entity to implement that solution due to potential financial issues.

Governance

LA-RICS supports the efforts of the waiver entities as a whole with regards to governance. In the absence of Federal legislation that establishes other governance, we are forced to establish it ourselves. And, as stated previously, it may be the case that this governance becomes the long term solution in the absence of Federal legislation. Therefore, the waiver entities must work to create a governance solution that is fair and sustainable. Specifically, LA-RICS supports the following governance related positions of the Operator Advisory Committee (OAC):

- The Commission should support the OAC's effort to secure a PLMN ID for public safety. Specifically, the PLMN ID should not be allocated to the Commission, nor any individual waiver entity.
- The Commission should support the OAC's effort to have the Department of Homeland Security's Office of Emergency Communication (OEC) to serve as the Management Entity for the network identifiers.
- The Commission should support the OAC's effort to create a new governance entity that has the capability to collectively make decisions and enter into agreements regarding issues affecting all waiver entities. The new entity would:
 - Provide overall administration to the network identifiers. The new entity will determine the final database and the periodicity of database updates, while the OEC will distribute the database..
 - Enter in to contracts with equipment and/or service suppliers to implement the common components of the nationwide network (i.e., those that are outside the scope of the waiver jurisdiction) required to provide interoperability.
 - Automatically include any new entity that had the authority (via waiver or other mechanism) to operate on the PSBL. Such a provision in its governance would ensure sustainability.

Respectfully submitted,
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